Policy Research

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International Economic Analysis and Prospects

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Economic Shocks and the Global Environment

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and
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Countries tend to react as though favorable external shocks are permanent and unfavorable external shocks are temporary. This tendency — together with the magnitude and diversity in effect of external shocks — complicates attempts to get prices right and to determine what right prices should be. It might also help explain why growth rates differ among countries.

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This paper — a product of the International Economic Analysis and Prospects Division, International Economics Department — is part of a larger effort in the department to analyze global linkages. An earlier version of this paper was presented at the Global Economic Prospects Seminar Series at the World Bank in November 1991. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mila Divino, room S8-037, extension 33739 (March 1992, 55 pages).

Policy formulation in most countries is complicated by the role of the external economic environment, especially during periods of great external shocks. McCarthy and Dhareshwar examine how individual countries were affected by, and responded to, external shocks. They apply an enhanced version of an earlier methodology for estimating the effect of three kinds of shock: terms of trade, variations in global demand, and changes in the interest rate. They discuss the magnitude of these shocks and country responses to them in Brazil, Ireland, and Korea and present numerical results for some other countries.

McCarthy and Dhareshwar find that the magnitude of external shocks may be greater than previously recognized. For large industrial OECD countries, such as Germany, it is not unusual for external shocks to equal 2 percent of GDP in any one year. And such shocks range as high as 10 percent or more in some developing countries, particularly those that depend heavily on a large trade share in commodities. The size and components of the shock depend on such factors as the country's openness to trade, the composition of its imports and exports, and its level of external debt.

The authors also found that countries differed greatly in their responses to external shocks. Some rely on additional external financing, some place more emphasis on export promotion, and others favor import substitution. Among industrial OECD countries, for example, Germany addressed unfavorable external shocks by combining a pro-export bias with tightening of domestic demand; its balance of payments soon began to improve. The United States, on the other hand, allowed its export share to deteriorate and relied more on external financing — with unfavorable consequences for its current account.

Among developing countries, easy access to external financing often provided an easy short-term option for policymakers — especially in countries with a strong anti-export bias where political expediency precluded any significant curtailment of domestic spending. A policy of leaning on external financing often created external balance problems in the medium term.

McCarthy and Dhareshwar conclude that the magnitude and composition of external shocks should be part of any explanation of why growth rates differ among countries. Some countries tend to view favorable shocks as permanent and unfavorable shocks as temporary. This asymmetry of response, together with the magnitude of the shocks, complicates attempts to get the prices right — and even to determine what the right price is.

In formulating economic policy, McCarthy and Dhareshwar argue, policymakers must adequately consider external shocks, because of their major impact on economies. They do not answer the question: Which policy instruments are the correct response in which situations? But they do offer insights that may be of use to policymakers facing these issues.

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Acknowledgment

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I. SUMMARY

1. Policy formulation in most countries is complicated by the role of the external economic environment especially during periods when large shocks are taking place. In this paper a particular aspect of this problem is considered, namely the impact of external shocks on the current account of individual countries and how these countries responded to them. A methodology is devised that allows one to estimate these shocks and the response, on a yearly basis. The results are discussed in some detail for three countries, Brazil, Ireland and Korea. Preliminary results are provided for a number of other countries. Three broad classes of shocks are considered, terms of trade, variations in global demand and interest rate changes. The results obtained suggest that the size of external shocks may be larger than previously recognized. For the large OECD industrialized countries, such as Germany, it is not unusual to have external shocks equal to 2 percent of GDP in any one year while for some of the developing countries they can range as high as 10 percent or more. This is especially true in those countries with large trade share and heavy dependence on commodities. The responses also show great differences. Among OECD industrialized countries Germany, for example, addressed unfavorable external shocks by combining a proexport bias with tightening of domestic demand so that the balance of payments soon began to improve. The United States on the other hand allowed its export share to deteriorate and tended to rely more on external financing with rather unfavorable consequences for its current account. Among developing countries, easy access to external financing provided an easy option in the short term for policymakers in many instances. This was particularly true where strong anti-export bias already existed and political expediency precluded any significant

curtailment of domestic expenditure. Such policy choices often led to major problems with external balances in the medium term.

2. In the current debate on why growth rates differ between countries the results obtained in this work suggest that the magnitude of external shocks strongly suggest that they need to be included as part of the explanatory process. In responding to shocks the tendency seems to be to view favorable shocks as permanent and vice-versa. This asymmetry of response together with the magnitude of the shocks complicates further any attempts to get the prices right or indeed to determine what the right prices should be.

II. THE ROLE OF EXTERNAL SHOCKS

3. There is extensive literature on the role of external factors in economic development. These range from the work on terms of trade by Ricardo to more recent work by Lewis (1969), Prebisch (1950) and Singer (1950). Broadly speaking these authors argued that over the long run the tendency is for the terms of trade of commodity exporting countries to deteriorate. Economists in countries such as Australia with a large traded sector have also devoted considerable attention to these issues. Salter (1959) and Swan (1960) have made basic analytical contributions for the analysis of booms and busts. More recently, one finds the problem rediscovered as the Dutch disease which afflicted some oil exporting countries in particular. Corden (1984) provides a useful review.

4. In recent years there has been renewed debate on the differences in growth performance between countries. The traditional view of long-term growth based on Solows model (1970) is becoming increasingly questioned. Romer (1989) has proposed including the role of economies of scale while other analysis tends to focus on the role of the external environment and the relative importance of domestic policies. The external environment can affect countries in widely differing ways while at the same time countries can choose to respond to it by a variety of approaches. Recent events in the Middle East have once more emphasized the need for assessing the role of the international environment and ideally how countries might best respond to it. The price of oil doubled to about US$30 a barrel, most major stock markets lost about 10-15 percent of their value, and, at least for a while, there has been a general upward thrust in world interest rates. These events have produced added impetus for the study of what are broadly termed shocks. The present work provides one approach for weakening external shocks.

5. There is little unanimity in the literature on what actually constitutes a shock or how it should be measured. In this paper the general approach is that, any deviation from the pattern of the immediately preceding years, is considered a shock. One can readily modify these criteria by the design of appropriate digital filters. Depending on one's interests, for instance, one could filter out various harmonics corresponding to either business cycles or Kondratieff style waves. The particular advantage of the present approach is that it allows one to compute the impact of shocks on a year-by-year basis. This is elaborated on further in the section on methodology.

6. A number of authors have focused on different aspects of shocks and adjustment. These include Bruno's (1982) emphasis on structural change, Khan (1986) highlighting the exchange rate or van Wijnbergen (1984) on short-term adjustment measures for oil price shocks. The principal focus in the present work is on the current account: the impact of the external environment on the current account--and the adjustment in response to it. This is estimated for a variety of countries. The analysis is generally for the period 1973-1989 except for some relatively minor data limitations.

7. Over the last two decades there have been a number of major shocks. These have resulted in wide repercussions for the global economy. Depending on the specific country these can be either favorable or unfavorable. The more notable shocks were:

(a) The oil shocks of 1973 and 1979.

(b) Significant changes in terms of trade. These include the supply shortfall in a number of agricultural commodities in the early seventies, the coffee/tea boom of the later seventies and the generally unfavorable trends in many commodity prices in recent years.

(c) The rapid increase in world interest rates in the late seventies/early eighties.

(d) Changes in the global demand for exports, strongly positive for most of the period 1965-89 but interrupted by slowdown in some years and more notably by a serious recession in the early eighties.

(e) Changes in official and especially private transfers to some countries and the sharp drop in private loan capital following the debt crisis of the 1980s.

(f) There have also been significant changes in the composition of exports, as the relative importance of commodities declined, while that of high tech items increased. (This change in composition is not covered in the present analysis).

8. These shocks lead to a number of interesting questions. How big was their impact? How vulnerable were different countries? What were the welfare effects on different countries/groups of countries. Who gained/lost? What was the policy response? In particular are there any lessons for future policy formation? For developing countries in particular, how important are these external shocks compared to the role of domestic policies? The present paper is a first step in analyzing these issues. It is shown that both the impact of shocks and the policy response to them tend to vary widely between countries. It is to be noted that some shocks are not independent of each other; thus, terms of trade changes could also be associated with changes in interest rates or the growth of the global economy. This further complicates the task of the policymaker in the choice of appropriate response. It is

perhaps not surprising that shocks have such different impact, when one considers the differences in economies, in terms of openness, domestic market size, import composition, level and structure of external debt. However, the variety in policy responses, as measured by performance indicators, even at the aggregate level considered here, is more intriguing. While some of these differences may be due to variations in structure between countries, there still remain striking differences in policy response, especially in areas such as the reliance on foreign borrowing, or the amount of emphasis on domestic contraction or export promotion.

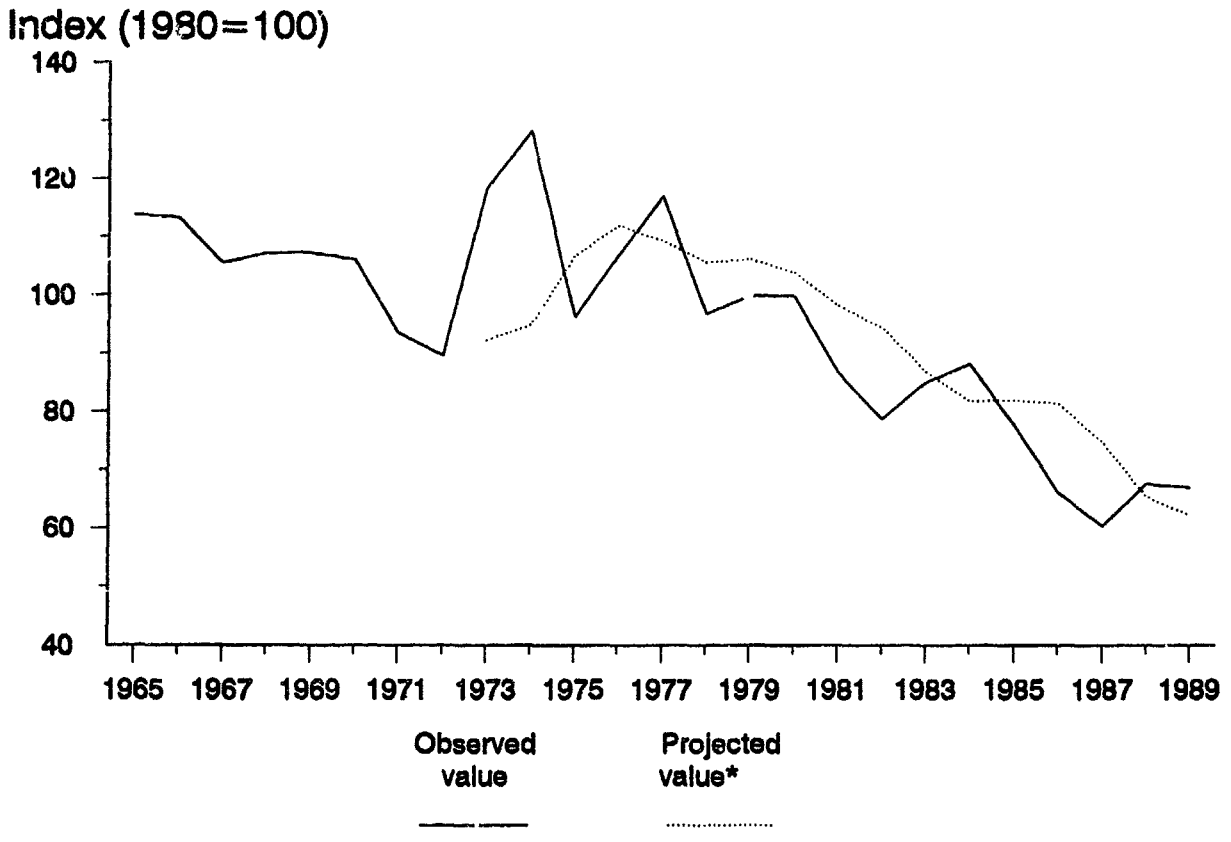
III. GLOBAL SHOCKS

9. Three principal types of external shocks are considered over the period 1973-1989: terms of trade, changes in global demand for exports, and interest rate changes. This analysis can be readily extended to consider a more detailed study of shocks. In particular it seems important to consider separately non-fuel and manufactures terms of trade movements. For some countries changes in the level of transfers and other capital flows are an important component of the current account adjustment, while for other countries the economic situation in their respective trading partners may be of particular relevance.

- o Terms of Trade. Since 1965, the aggregate pattern for prices of commodities other than oil has been a strong downward trend interrupted only by a few boom years (Figure 1). Thus between 1973 and 1989 commodity exporters lost about US$130 billion (in

Figure 1: NON-OIL COMMODITY PRICE

(deflated by the U.S.$ MUV index)



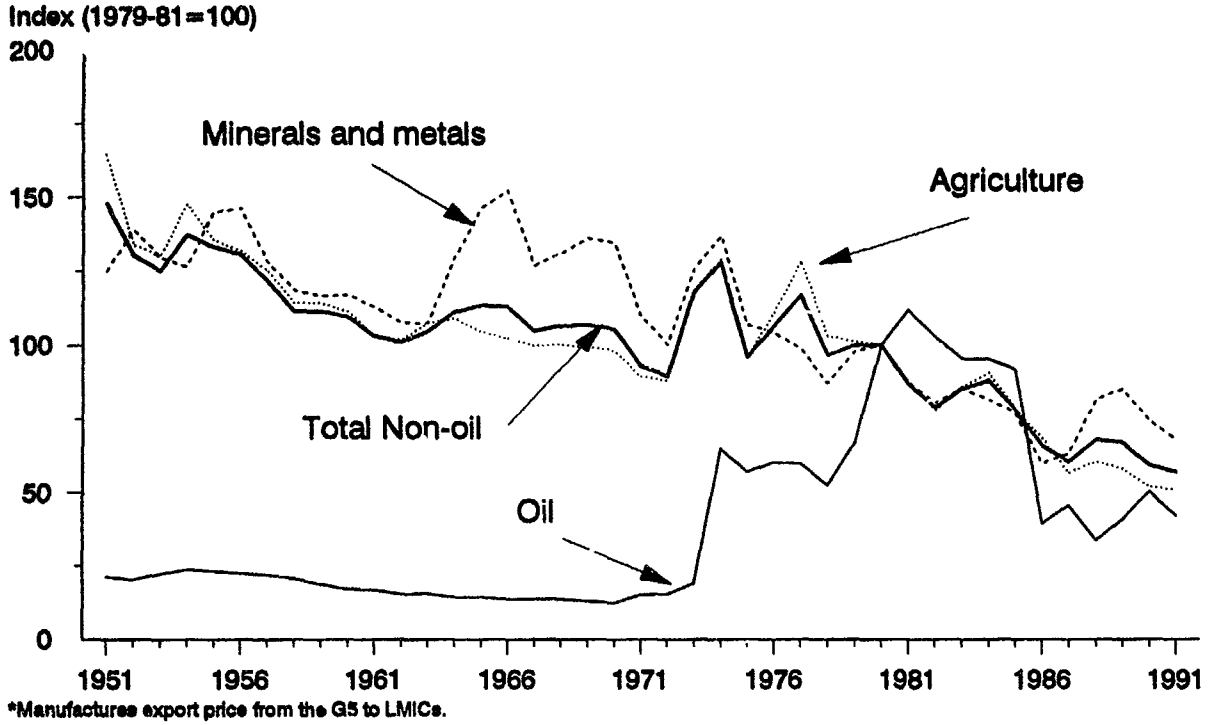
* Based on methodology explained in the text.

1980 prices) or around 25 percent of their export earnings through price effects alone. If one adjusts for changes in volume the estimated dollar loss would be even bigger. The size of these losses varies greatly between countries. Some indication of changes in terms of trade for various subaggregates are given in Figure 2. Big losers in recent years are those countries with export composition tilted towards agricultural commodities. These include many of the poorer countries in Africa, where coffee and cocoa figure prominently in their exports.

- o Global Demand Effects. The level of world trade is, to a large extent, determined by global economic activity which in turn is mainly determined by OECD activity. World trade has exhibited a steady growth since the sixties with notable exceptions in the mid-seventies and early eighties (Figure 3). However, the rate of increase has slowed from around 8 percent p.a. in the sixties to about half that in the late eighties. Again the effect of these changes varies greatly between countries. On average, the elasticity of developing country growth with respect to the growth of world trade is around 0.5 percent but this varies a great deal depending on country trade partners.

- o Interest Rate Effects. The nominal interest rate (on six-month US$ LIBOR) has varied between 5 and 16 percent since 1965 (Figure 4). The impact of these changes on current accounts also varies a great deal between countries, depending, in the first place, on

Figure 2: REAL COMMODITY PRICES
(deflated by the U.S.$ MUV index*)



*Manufactures export price from the G5 to LMICs.

whether they are net debtor or creditor, and then if they are net debtor, like most of the developing countries, the level and composition of debt. However, the main impact of the rise in interest rates (for many of the developing countries) has been increasing indebtedness.

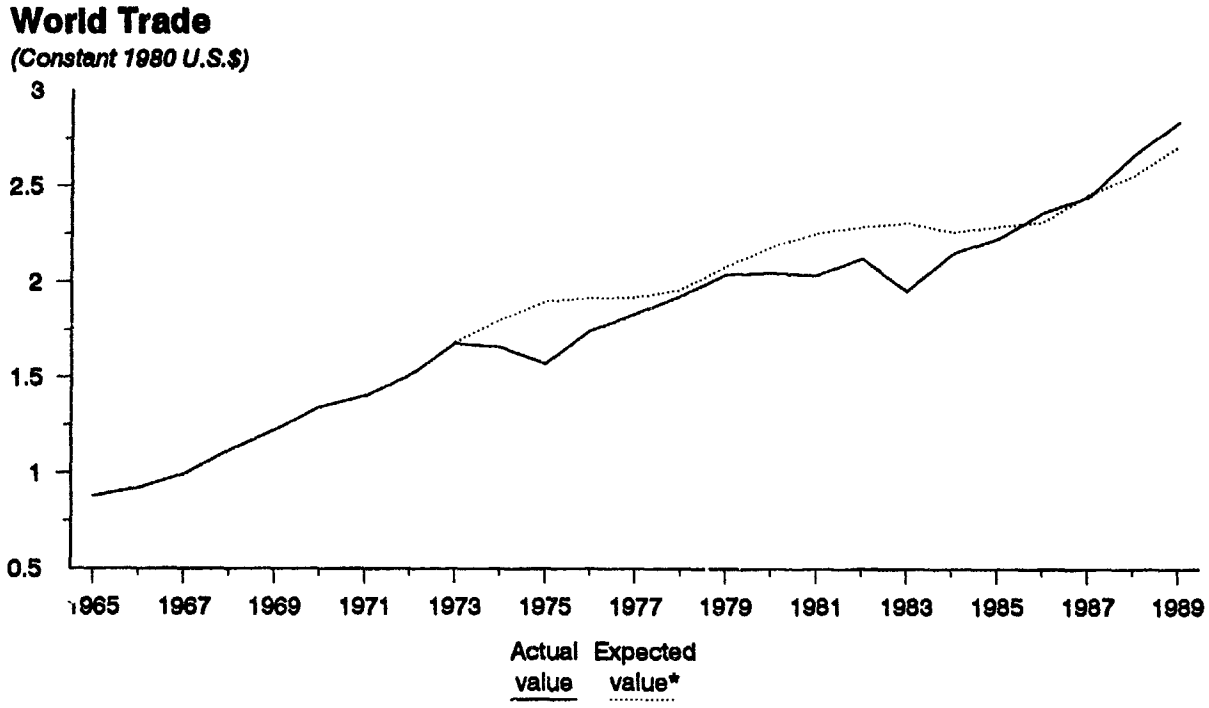
- o Transfers. Transfers have provided a significant component of balance of payments support for many poorer countries for a number of years. More recently some members of the European Community have benefitted from significant transfers.

IV. PERFORMANCE INDICATORS OF POLICY RESPONSE

10. The performance response is considered by estimating four indicators: export promotion, import substitution, macroeconomic contraction (expansion), and external financing. Again these estimates can be extended to include, for instance, various sub-aggregates for export promotion or import substitution.

- o Export Promotion: the change in export market share compared to recent levels. This provides a measure of the success of overall policy in stimulating exports.

Figure 3: WORLD TRADE LEVELS AND GROWTH RATES



* Based on methodology explained in text.

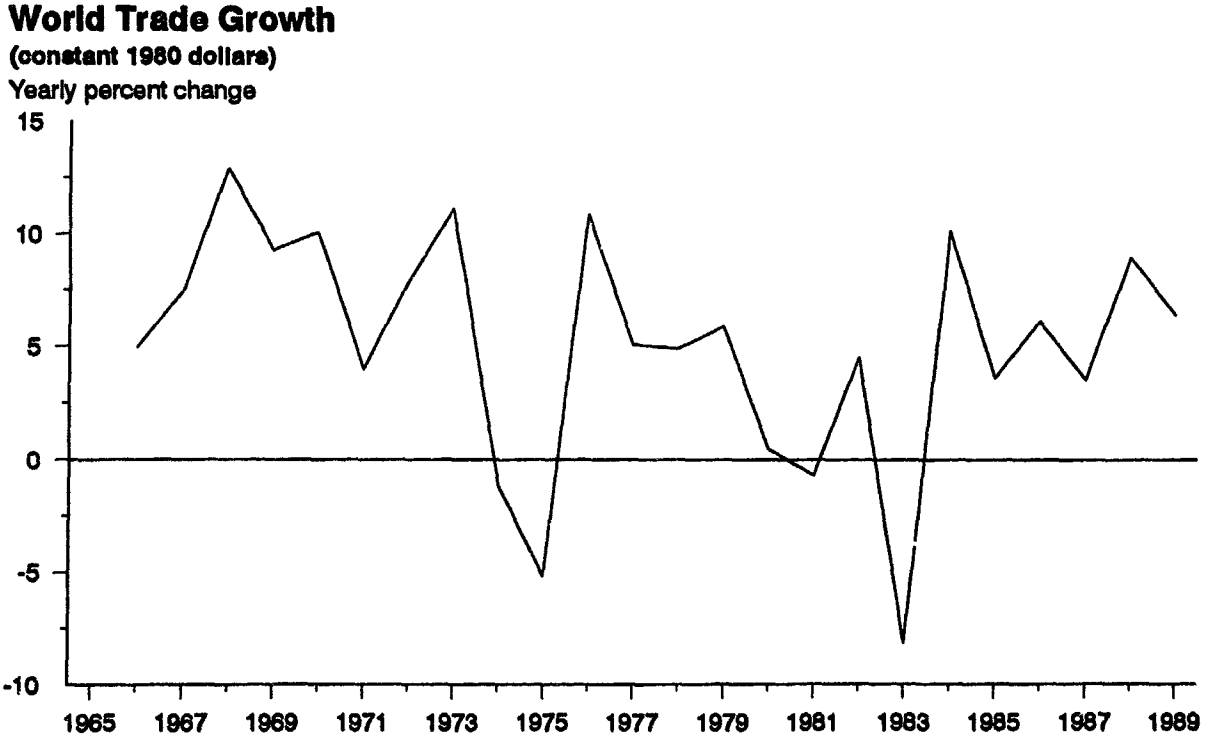
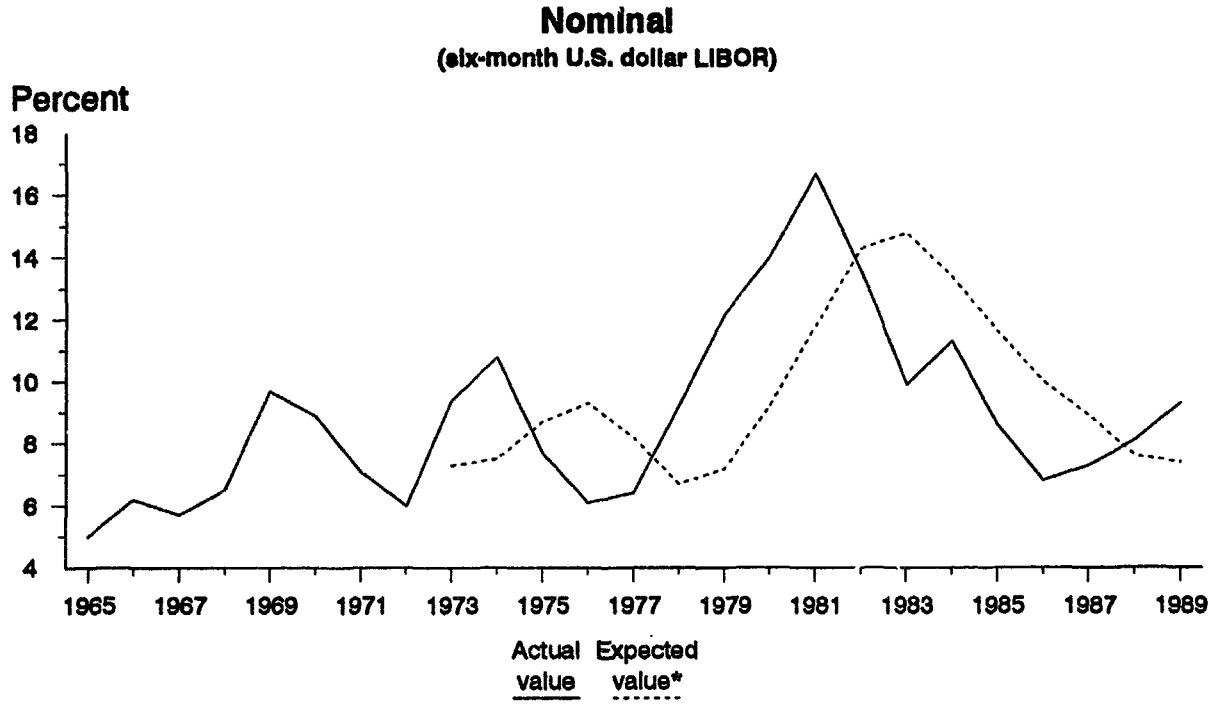


Figure 4: GLOBAL INTEREST RATES



* Based on methodology explained in text.

- o Import Substitution: change in imports as measured by change in import/GDP ratio. This gives an indication of relative importance of substitution attempts within the economy, and the degree to which the policy response favored increased trade liberalization. It would be preferable to use change in import elasticity rather than in import share but there are important difficulties in interpreting point estimates.

- o Macroeconomic Contraction (Expansion): the impact of changes in the level of macroeconomic activity, as measured by GNP growth rate, on the level of import demand.

- o External Financing: the amount of additional external financing beyond that required in the previous year for "unshocked "level of exports and imports. The present work does not discuss risk hedging policies--financing, diversification, hedging strategies or what part these play in mitigating the original shocks. Given the major role of external financing in the policy response it would be interesting to analyze this component further.

11. Policy Variables/Indicators. The pattern of policy variables provide some guidance on the measures behind the policy response adopted by individual countries. These variables include exchange rate, government deficit, domestic credit, domestic energy price, and a metric of trade

posture. More extensive analysis of public finances can provide insight on how the adjustment policies relied on, changes in expenditures for investment/social sectors while, revenue changes can indicate alterations in the tax regime. There variables can then be combined with various measures of adjustment such as GNP growth rate, domestic savings rate, productivity, and inflation rate. For many of the more developed countries unemployment statistics provide a good indicator of the impact of adjustment, while the impact of adjustment for some of the poorer countries can be captured by various social indicators such as infant mortality, nutritional status, or educational level. However, many of these operate with long lags and many countries' data are poor.

IV. ANALYTICAL FRAMEWORK

12. General statements at an aggregate or regional country group level about external shocks and the response to them are only of limited value to policymakers. Since most policy is made at the country level it is essential that such work be complemented by analysis at the individual country level. The methodology used in this study is a modified version of that developed by Balassa (1981).

13. The postwar years through 1973 may be considered a tranquil period for the world economy, especially as compared to the period since then, which has been characterized by a number of shocks of different nature. While it might be obvious, over a specified period, that a given country has been buffeted by adverse developments, the composition and extent of the shocks

impinging on the economy are not observable. Nor are the adjustments undertaken by the economy in response to the shocks. An accounting or modelling framework is needed to quantify the shocks and adjustments.

14. There is a variety of such frameworks in literature, ranging from heuristic accounting formulations through macroeconometric simulation models and computable general equilibrium models, and on through theoretical multi-period models with sound microeconomic foundations. The simpler heuristic technique followed in this paper has the virtues of transparency of interpretation and ease of empirical implementation for a large number of countries. This technique has also been used in Balassa-McCarthy (1984) and McAleese-McCarthy (1989). The following is a brief summary of the technique.

15. If one assumes that for a given country, under conditions of "business as usual," there is a stable pattern of evolution of such variables as world trade, import prices, export prices, and interest rates, then these, together with a known, stable set of policies, determine the current account balance for the country. For convenience, the set of values for these variables (and for the current account balance) expected normally to prevail for a given year or period may be referred to as the "trend" set of values. Now suppose this economy is hit by a major shock or shocks, such as an adverse terms-of-trade movement, a contraction of demand for its exports, or an interest rate increase. The country will respond to the shocks with a range of policy adjustments, including trade adjustments. As a combined result of the shocks and the adjustments, the "actual" or observed values assumed by these variables and the current account balance for the period will be

different from the "trend" configuration that would have resulted in the absence of shocks and adjustments. In other words, the difference between the "trend" values and the "actual" values is due to shocks and adjustments.

16. The respective effects of shocks and adjustments may be decomposed by introducing the concept of a "hypothetical" configuration of the relevant variables corresponding to the state of the economy, as it would be, given the shocks, but without adjustment. Then the difference between the "hypothetical current account deficit" and the "trend current account deficit" may be taken to be the overall effect of the shocks on the economy, and the difference between the "hypothetical current account deficit" and the "actual current account deficit" to be the overall effect of the adjustment (Figure 5). A similar analysis of the components of the current account deficit yields further insight into the adjustment process.

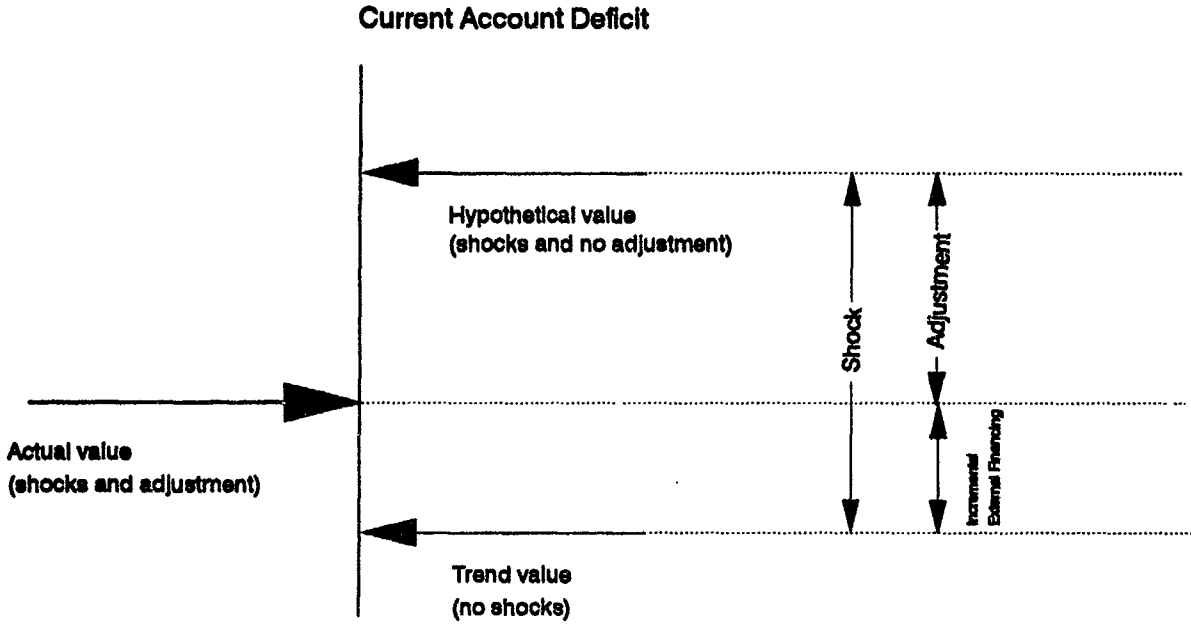
17. Thus the essential core of the methodology is based on devising three measures of the current account for each year of the period under analysis. These are called:

Actual: A ; Trend: T ; Hypothetical: H.

A: the current year U.S. dollar level of current account as reported in the IFS.

T: The value that would result if variables continued to evolve in a no shock situation. For convenience this

Figure 5: THE "SHOCKS AND ADJUSTMENTS" SCHEMA



is called the trend value. In order to compute this one has to make certain assumptions. In the present work it is assumed that in a no shock situation, macro aggregates such as GDP growth, continue at a rate equal to that achieved during the previous three years, while share values, such as export share of total world exports, remains equal to the average value over the previous three years.

H: This is hypothetical. It is the value that would result in the face of changing external conditions if domestic policy had remained unchanged. Again trying to specify this poses many difficulties. It can be defined in many ways. In this paper the following procedure is adopted. The hypothetical level of trade is defined as the level of trade that would result if a country maintained its share (average over the last three years) of the actual (current) value of total world trade--the assumption being that unchanged domestic policy would just maintain trade share.

Shock S: is then defined as H-T. (Note that the convention adopted is that unfavorable shocks are positive).

Response R: is defined as H-A

Additional Financing F: is defined as A-T

Thus it is noted that the shock, S, minus the response to it, R, equals the additional financing, F. There may also be changes in unrelated factors that affect the level of financing. These are not considered here but can be incorporated in a more detailed analysis. Put another way if the response exactly offsets the shock then no additional financing is indicated, while a weak or inadequate response would require some positive level of additional financing.

18. Analytical details are as follows. For a given year, let

C - the current account deficit in current U.S. dollars

M - the volume of merchandise imports

X - the volume of merchandise exports

P^M - import price index in U.S. dollars

P^X - export price index in U.S. dollars

F - the interest-sensitive part of net factor-service payments in U.S. dollars

N - the non-interest sensitive part of net factor-service payments plus net non-factor service payments

U - private and official unrequited transfers, in U.S. dollars

19. Let subscripts T and H refer to the "trend" and "hypothetical" values of the variables, and the unsubscripted form of the variables, to the actual values. Then, the current account deficit may be defined as imports

minus exports plus factor payments by the country minus transfers to the country. That is,

$$C = MP^M - XP^X + F + N - U \qquad (1)$$

Similarly, the "trend" and "hypothetical" values:

$$C_T = M_T P_T^M - X_T P_T^X + F_T + N_T - U_T \qquad (2)$$

$$C_H = M_H P_H^M - X_H P_H^X + F_H + N_H - U_H \qquad (3)$$

Then

$$\textit{total shock} = C_H - C_T \ ,$$

and

$$\textit{adjustment} = C_H - C \ .$$

20. $C-C_T$ is the difference between shocks and adjustments; it quantifies the additional external financing necessitated by the shocks. Following Balassa-McCarthy (1984), it may be defined as a component of adjustment, thus arriving at a shocks-adjustment identity.

21. The "trend" scenario (no shocks) may be arrived at on the following plausible assumptions:

T1. The import and export prices equal the average of past three years.

T2. The world trade would grow at the medium-term rate it had for the past three years.

T3. The country maintains its share of world exports, computed as its average share over the past three years.

T4. The GDP of the country would grow in the current year at the medium-term rate it had at each of the past three years.

T5. The country's ratio of imports to GDP remains the same as the average of the past three years.

T6. The trend interest rate is assumed to remain the same as in the past three years.

T7. The net unrequited private and government transfers to the country maintain their level at the average of the past three years.

T8. Net non-factor service payments and non-interest sensitive component of factor-service payments are the same as the observed values.

22. The formal expressions are as follows:

Trade prices:

$$P_T^X(t) = (P^X(t-3)P^X(t-2)P^X(t-1))^{1/3}$$

and similarly for P_T^M.

Income: Let

$Y(t)$ = GDP of the country in year t in real terms, in 1980 U.S. dollars, and

$g(t)$ = GDP growth rate from 1965 through year t, as estimated by OLS. Then

$$Y_T(t) = [Y(t-3)(g(t-3))^3 Y(t-2)(g(t-2))^2 Y(y-1)g(t-1)]^{1/3}$$

Expected ("trend") world trade is computed analogously.

Interest rate:

$$i_T(t) = ((1 + i(t-3))(1 + i(t-2))(1 + i(t-1)))^{1/3}$$

Then, the "trend" factor-service payments (the interest-sensitive part) would be

$$F_T = i_T \frac{F}{I}.$$

23. Depending on the level of detail needed and data availability, it is possible to make the "trend" scenario more realistic and sophisticated. For example, an alternative to T2 would be to focus on the income and import demand growth in three major partner countries (rather than the growth of world trade) as in Mitra. As another example, net private transfers could be related to wage rates in related countries, and net official transfers to growth rates of industrial countries.

24. The "hypothetical" scenario (shocks and no adjustment) may be constructed on the following assumptions:

H1. The observed import and export prices for the year.

H2. The actual world trade for the year.

H3. The country passively accepts its share of world exports without any additional export promotion effort.

H4. The real GDP of the country would grow in the current year at the same rate as the trend rate, adjusted for the difference in "trend" exports and "hypothetical" exports.

H5. The country's ratio of imports to GDP remains the same as over the past three years.

H6. The actual interest rates for the period.

H7. The actual transfers for the period.

25. The assumption H1 implies that the country is a price-taker in the imports market, and that changes in export promotion effort by the country, if any, is reflected in its observed share of world trade being different from "trend." The latter could be relaxed in a more comprehensive framework that would incorporate effects such as those due to changes in the real exchange rate or labor market adjustments. From H1 we have

$$P_H^M = P^M \quad \text{and} \quad P_H^X = P^X. \tag{4}$$

From H2 and H3, we can readily compute X_H. Then, using H4, we can arrive at the "hypothetical" GDP as the "trend" GDP adjusted for $X_H - X_T$. This would yield M_H through assumption H5. That is, if m is the country's imports-to-output ratio, its "hypothetical" GDP would then be given by

$$Y_H(t) = Y_T(t) + X_H - X_T ,$$

and the "hypothetical" imports by

$$M_H = mY_H(t).$$

From H6, we get

$$F_H = F. \tag{5}$$

Assumption H7 is that unrequited transfers are invariant to policy adjustments, that is,

$$U_H = U. \tag{6}$$

Using (4) through (6), we may write (3) as

$$C_H = P^M M_H - P^X X_H + F + N - U. \tag{3'}$$

Thus, we have

$$\begin{aligned} \text{shock} &= C_H - C_T \\ &= [(P^M - P_T^M)M_T - (P^X - P_T^X)X_T] + [P^M(M_H - M_T) - P^X(X_H - X_T)] \\ &\quad + F(1 - \tfrac{i_T}{I}) - (U - U_T), \end{aligned} \tag{7}$$

and

$$\text{adjustment} = C_H - C$$

$$= P^M(M_H - M) - P^X(X_H - X). \qquad (8)$$

26. The various groups of terms in the expression for shocks in equation (7) may be interpreted as follows.

27. The first group, $[(P^M - P_T^M)M_T - (P^X - P_T^X)]X_T$, shows the price effect of the disturbances on "trend" import and export volumes, and thus may be taken as the price or terms-of-trade shock.

28. The second group, $[P^M(M_H - M_T) - P^X(X_H - X_T)]$, measures the net quantity effect of the disturbances. The export-volume shock is $-P^X(X_H - X_T)$ and the offset due to the resultant reduction in imports is given by $P^M(M_H - M_T)$.

29. The term $F(1 - i_T/i)$ is the interest-rate shock.

30. The various terms in the expression for adjustment in equation (8) may be interpreted as follows. The term $P^M(M_H - M)$ represents the reduction in the import bill from the hypothetical scenario, and may be further broken down into two components: import reduction through a growth slowdown and import substitution (reduction in the imports-to-output ratio). Formally, let M' be the imports of goods if the imports-to-output ratio stayed the same. Then M' = mY, and we have

$$P^M(M_H - M) = P^M(M_H - M') + P^M(M' - M).$$

The term $P^M(M_H - M')$ denotes the reduction in imports achieved by allowing the output to fall, and the term $P^M(M' - M)$ denotes import substitution. It may be noted that there is a degree of arbitrariness in this decomposition.

31. Finally, the term $P^X(X_H - X)$ stands for export promotion efforts by the country.

32. Data Sources. The balance-of-payments data are all from IFS, downloaded through BESD.1/ These include: current account balance, exports

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1/ Bank Economic and Social Database, User's Guide, World Bank, July 1989.

and imports, transfers, and factor-service payments. The income data are also from BESD. Trade price indices are from World Bank sources.2/ The relatively recent innovation by the Fund of separating factor and nonfactor service flows has been helpful. It has been assumed that half of net factor service payments are interest sensitive. The interest rate variable, i, is the six month U.S. dollar LIBOR.

33. The main bottleneck--limiting the coverage across countries and time as well as depth of analysis--has been trade prices. In the analysis, the unit values of imports and exports, from IFS, have been used. For a majority of developing countries, unit values are not available. Further, it would be straightforward to extend the above analysis to study the effects of nonfuel terms of trade, manufactures terms of trade, adjustment to fuel shocks, and promotion of manufactures exports as further trade price data becomes available.

V. SHOCKS IN BRAZIL, IRELAND AND KOREA

34. Preliminary estimates have been made of the shocks and policy response to them for about 50 countries. In this section, three countries are selected which reflect some degree of variation in, not only the magnitude of the shocks and the response to them, but also the prevailing country conditions. These are Brazil, Ireland and Korea. Further details on shocks and responses to them for the second oil shock are given in Balassa and

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2/ Further details are given in M. Riordan, DEC Analytical Data Base, IBRD, forthcoming.

McCarthy (1984) for Brazil and Korea while the Irish situation is discussed in McAleese and McCarthy (1989). Brazil was a relatively successful country up to the first oil shock and continued to maintain a strong growth performance into the mid-seventies. However, the severity of external shocks and inappropriate policy choices eventually led to an unfortunate situation: much of the Irish economy was inward-looking up to the early eighties. A poorly conceived attempt to stabilize the economy in the early eighties was unsuccessful and led to results such as the debt/GDP ratio rising to over 100 percent. However, adjustment efforts were more successful in the late eighties. The policy package at this time included a mixture of export oriented policies, incomes policy and strong support from the EEC. Korea was a relatively open economy and so suffered rather large shocks. However, the strong productive capacity of the economy and a highly elastic supply response meant that external adjustment could be achieved through a combination of changes to relative prices and adjustment to domestic demand. Eventually favorable improvement in terms of trade and a more buoyant global economy provided further stimulus to a strong economic performance.

35. The shocks and the policy response for these three countries are now considered in more detail. This format is similar to that used in Balassa-McCarthy (1984) but with two principal differences. The present work is for a longer period while the shocks together with the response to them is given on a year-by-year basis. The country coverage in this work is also much broader and, in particular, includes a number of industrialized countries.

(a) Brazil. (The broad picture is given in Figure 6. Details are given in Appendix 1).

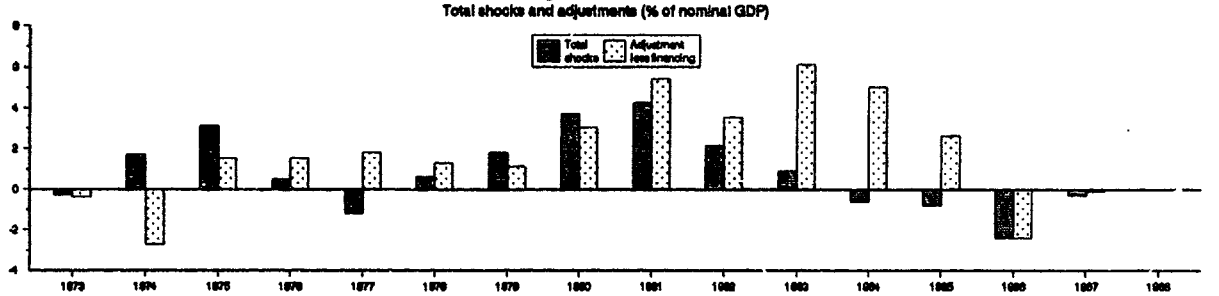
(i) External Shocks. The most significant external shocks were: unfavorable shocks in 1975, 3.1 percent of GDP; 1980, 3.7 percent of GDP; and 1981, 4.2 percent of GDP; and a favorable shock in 1986, 2.4 percent of GDP. Most of the 1975 shock was due to a terms-of-trade loss compounded by a slowdown in global demand. The 1980/81 shocks were primarily due to unfavorable movement in terms-of-trade and to a lesser extent, slowdown in global demand together with higher interest rates. The favorable shock in 1986 was due to improvement in terms-of-trade and a reduction in interest rates.

(ii) Policies Applied

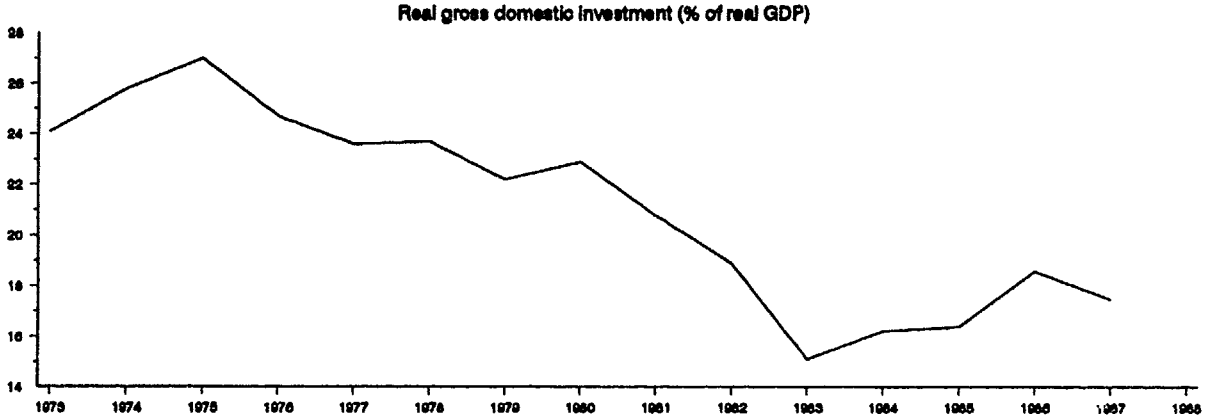
a. The response to the first oil shock was expansionary. This was accommodated by heavy reliance on external borrowing. The initial response to the second oil shock was also expansionary. However, by 1981 there was a policy switch to contractionary mode with output compression and significant limitations on imports.

Figure 6: BRAZIL

Total shocks and adjustments (% of nominal GDP)



Real gross domestic investment (% of real GDP)



Real GDP in US $B (log scale)

Real Effective Exchange Rate Index

Index (1980=100)

This contraction resulted in a sharp decline in investment (see Figure 6) and in per capita incomes.

b. After the second oil shock the policy regime continued to favor export promotion. The real effective exchange rate depreciated most years and exports responded by gaining market share. (Detailed results are given in Appendix 1, page 2). Import limitations resulted in substantial import substitution equivalent to 1.4 percent, 1.4 percent, and 2.1 percent of GDP in the years 1981, 1982, 1983.

c. The expansionary response to the first oil shock and initially to the second shock resulted in a major external debt burden. When the policy finally became contractionary a significant part of the adjustment fell on investment and per capita consumption. It was not possible to adequately offset the impact of these shocks, even by a strong export performance, as the total export sector accounted for only about 10 percent of GDP. The tilt against productive capacity also weakened the economy. When the upturn in the global economy occurred in the mid-eighties, Brazil was not able to take sufficient advantage of the opportunity. The situation was further compounded by

the many years of decline in per capita incomes so that by the late eighties, political support was weak for any viable alternative that required further sacrifice.

(b) Ireland. (Figure 7 and details in Appendix 1, page 6).

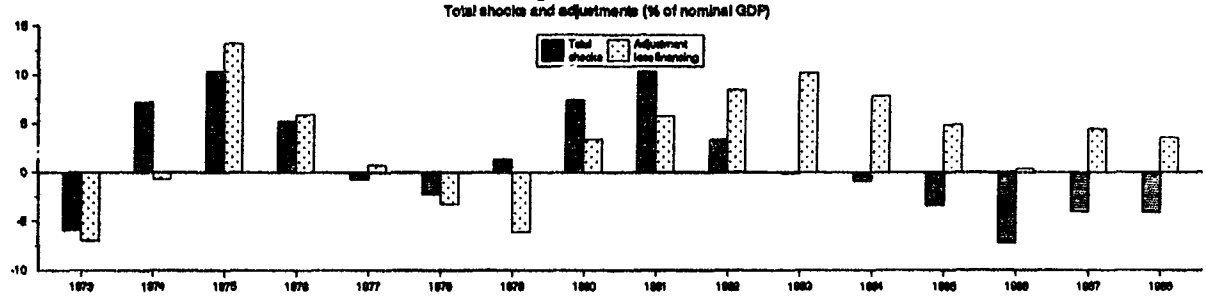
(i) External Shocks. Ireland was heavily dependent on oil imports in the seventies and early eighties. Consequently, it suffered major adverse shocks in 1974, 1975 and again in 1980, 1981 equivalent to about 7 percent, 10 percent, 7 percent and 10 percent of GDP in each of those years. These shocks were mostly (about 60 percent) due to adverse movement in terms of trade but had a significant component (about 25 percent) due to slowdown in the global economy.

(ii) Policy Response

a. The response to the first shock was some additional external borrowing but primarily countercyclical fiscal policy so that a mild recession ensued. However, even as changes in terms-of-trade continued to be unfavorable throughout much of the seventies the authorities sought to bolster employment by relying on external resources.

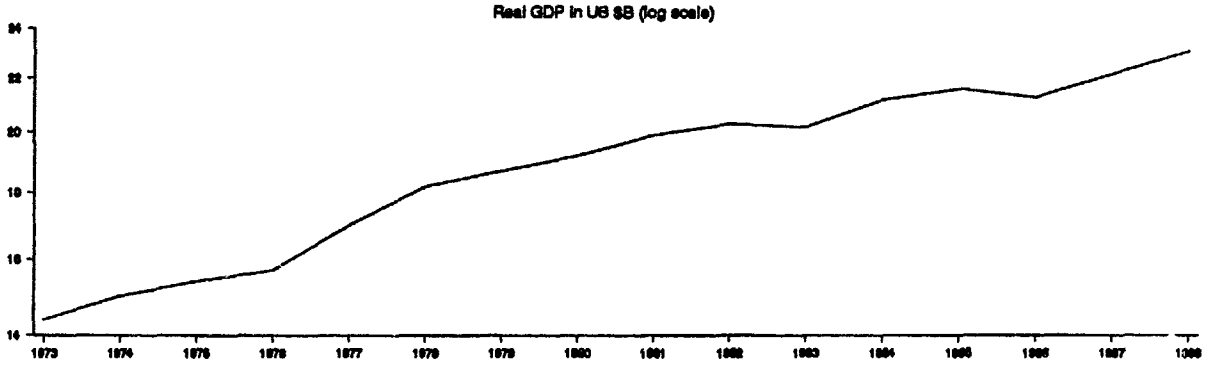
Figure 7: IRELAND

Total shocks and adjustments (% of nominal GDP)



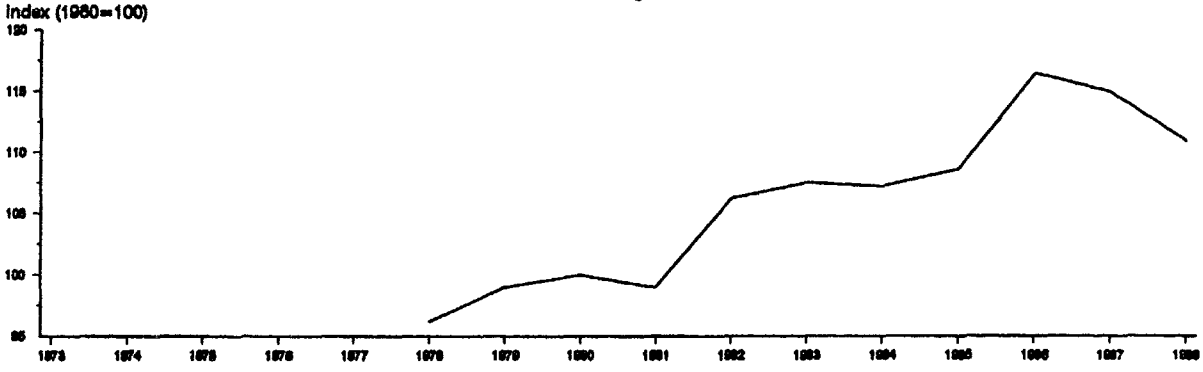
Real gross domestic investment (% of real GDP)

Real GDP in US $B (log scale)



Real Effective Exchange Rate Index

Index (1980=100)



b. This led to an economy being particularly vulnerable when the second oil shock struck. The situation was further compounded by the interest rate shock which led to a burgeoning external debt situation. The deteriorating overall situation masked some rather new initiatives for export promotion.

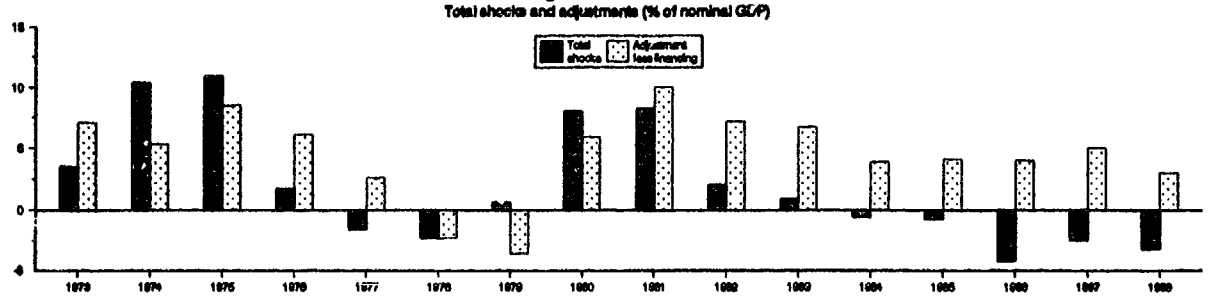
c. When the global economy eventually began to recover in the mid-eighties these export promotion efforts began to yield positive results. At the same time some of the external debt burden was alleviated by transfers resulting from EEC membership. At this juncture it is not clear whether this strategy can be sustained if the global economy stalls once more.

(c) Korea. (Figure 8, Details in Appendix 1, page 8).

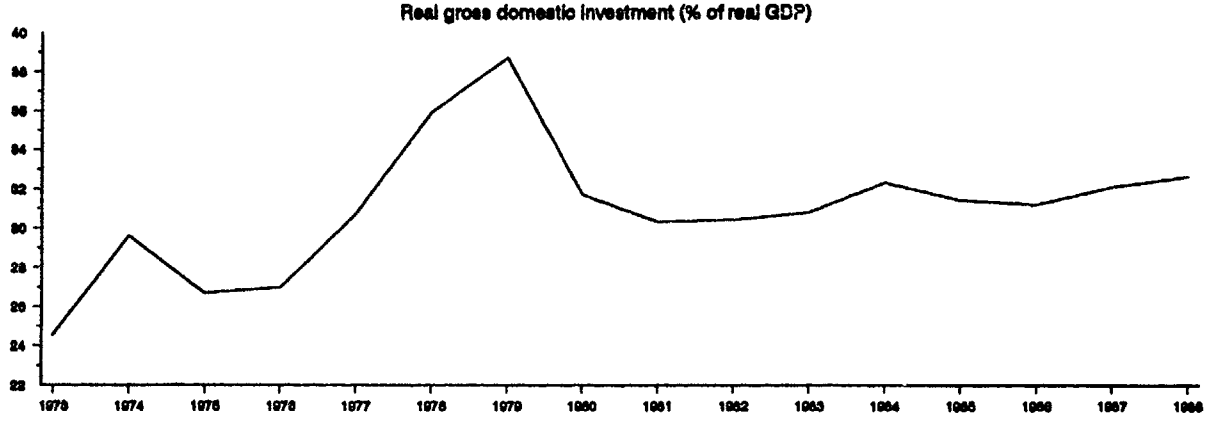
(i) External Shocks. Korea was severely impacted by adverse external shocks in 1974, 1975 and again in 1980, 1981 equivalent to 10.4 percent, 10.9 percent, 8.0 percent and 8.2 percent, respectively, of GDP. These were primarily due to adverse movements in terms of trade effects and to a lesser degree to a slowdown in global demand for exports. However, from 1984

Figure 6: KOREA

Total shocks and adjustments (% of nominal GDP)



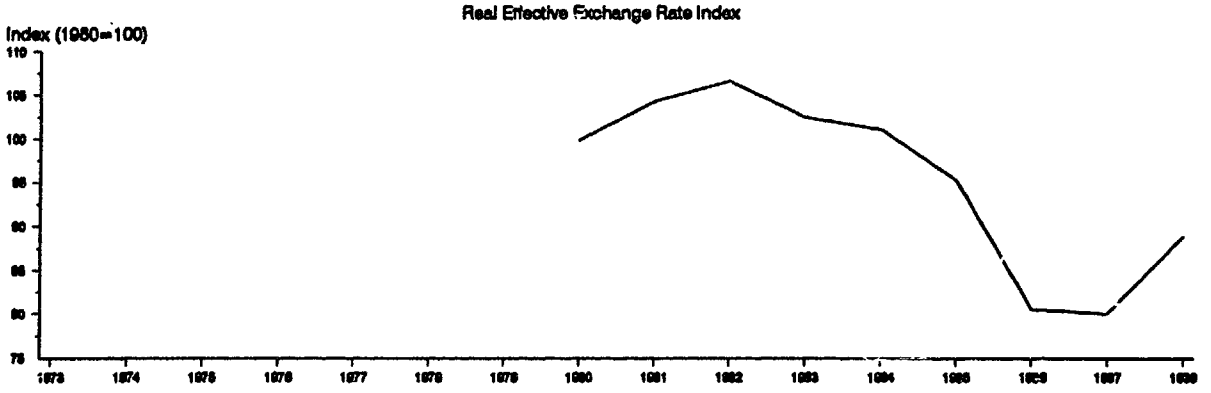
Real gross domestic investment (% of real GDP)



Real GDP in US $B (log scale)

Real Effective Exchange Rate Index

Index (1980=100)



onwards external shocks were favorable primarily due to improving terms of trade.

(ii) Policy Response

a. The response to the first oil shock was a strong pro-export policy combined with some constraint on the domestic economy. The economy then recovered to enjoy a strong period of growth over 10 percent. When the second oil shock struck, this growth surge was eased back some, while strong encouragement for exports continued.

b. The policy thrust was towards a steady depreciation of the exchange rate together with other incentives for exporters. These included access to favorable interest rate loans. The strong pro-export bias especially in manufacturing provided a strong basis for rebound when the global economy and especially the terms of trade for manufactures turned favorable in the mid- eighties.

c. Korea also increased its external debt but not unduly so during the unfavorable shock years.

However as interest rates eased by the mid-eighties the authorities were able to move rapidly to improve their external debt situation.

36. Policy Variables. The linkage between the performance variables and the actual policy package that produced them inevitably varies between countries. This will be the subject of further analysis where preliminary analysis suggests the role of real effective exchange rate and domestic energy pricing policies are particularly important.

VI. SHOCKS IN OTHER COUNTRIES

37. In this section some preliminary results are noted for a selection of countries in addition to the three discussed in the previous section: Brazil, Ireland and Korea. The data for all countries are listed alphabetically in Appendix 1. The countries chosen cover a wide variety of experiences from the poor developing countries of Africa to some of the more affluent OECD members. It is hoped that this will provide insight: first, on how countries responded; and second, which policies were most effective.

- Cote d'Ivoire. Cote d'Ivoire was impacted by a particularly volatile series of shocks since 1973. These include very unfavorable shocks in 1975 (9.8 percent GDP), 1981 (14 percent), 1982 (10 percent), and strong favorable shocks in 1977 (13 percent), 1985 (11 percent). A notable feature of the passive

response was the strong contraction of the economy especially since 1979 together with heavy reliance on import substitution.

- Germany. For most of the decade preceding 1986, Germany experienced adverse but relatively mild shocks due to unfavorable movements in its terms of trade and weak export markets. The response in most years was a modest macro contraction together with relatively successful export promotion efforts. Shocks turned favorable in 1986 primarily due to improved terms-of-trade.

- India. The magnitude of external shocks for India was relatively low, partly because India was not a very open country and also trade accounted for only a small portion of GDP. It adopted an inward-looking policy up to recent times. There are some who would argue, that this relative insulation from the outside world served them reasonably well, during the oil shocks and the slowdown in the global economy in the early eighties. However, in an import substitution economy, like India at that time, imports were already compressed so that policymakers were severely constrained in their room to maneuver. Given that further import compression requires large reductions in domestic demand and an endemic anti-export bias, it is perhaps not too surprising that increased foreign borrowing resulted. The costs of this approach became evident in the late eighties when a noncompetitive industrial sector was not well positioned to take advantage of the surge in global demand.

- Kenya. Kenya reflects the problems of many African countries. Its exports have a large commodity component while its imports are heavily biased towards capital equipment and intermediate goods. Consequently, for much of the period considered here, they experienced unfavorable movements in terms of trade and adverse global market conditions. A notable exception was 1977 when coffee prices benefitted from a frost in Brazil. The policy response to these unfavorable external shocks on the current account was to rely on external financing and reinforce further the traditional dependence on import substitution. Even during the boom period (roughly 1977-79) public expenditures increased as if the boom was perceived as permanent.

  Generally export promotion efforts were weak with the exception of tourism and horticulture. These two exports, aided by a favorable exchange rate, have expanded rapidly since the mid-1980s.

- Malawi. The pattern of shocks here was similar to Kenya. The response indicates a stronger export promotion effort, during much of the period, than in Kenya. There was also more reliance in Malawi on macro contraction.

- Malaysia. Malaysia has a much more diverse export composition than most developing countries and is also an oil exporter. Thus it experienced favorable shocks in most of the decade prior to 1981. However, when oil prices softened and global demand

weakened in the early eighties, Malaysia initially responded by an expansionary macro policy and continued to stress export promotion. As conditions failed to respond promptly, the authorities adopted a number of policy measures. The content of these policy measures included trade liberalization, relaxation of NEP related rules on employment and more favorable treatment of foreign investment. These measures, along with deep cutbacks in the fiscal deficit provided a strong indicator of the government's commitment to macroeconomic stability and promotion of a healthy private sector. This policy combination set the stage for a strong recovery in the late eighties.

- o United States. The Unites States experienced unfavorable but modest external shocks throughout virtually the whole of this period. The policy response involved some export promotion and import substitution together with macroeconomic expansion up to the early eighties. This was supported by additional external borrowing. Around 1983/84 there was some reversal of policies to a more expansionary macro mode. However a rather indifferent export promotion effort ensued. Again, this was supported by further external financing.

VII. CONCLUSION

38. The first conclusion is rather pedantic but important. External shocks can have a major impact and so need to be given adequate consideration in formulating country economic policy. However, there is a great deal of

variation between countries so that any analysis needs to have a country focus. In some instances shocks can be as high as 10 percent of GDP in any one year. The size and various components of the shock depends on such factors as degree of openness, export/import composition, external debt. The adjustment to shocks also varies a great deal between countries, with some of them relying on additional external financing while others place more emphasis on export promotion and yet others on import substitution. An interesting question is which policy instruments led to the various performance indicators, and is there a "correct" response to shocks. The present work does not provide a definitive answer to either of these at this stage, but does offer some insights that may eventually be of use to policymakers facing these issues.

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RESULTS OF SHOCKS IN SELECTED COUNTRIES: COUNTRY DATA SHEETS

- BRAZIL
- COTE D'IVOIRE
- GERMANY
- INDIA
- IRELAND
- KENYA
- KOREA
- MALAWI
- MALAYSIA
- UNITED STATES

I. Shocks as percent of GDP

Country=Brazil

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	-0.5	0.0	0.2	-0.0	-0.3
1974	1.2	0.3	0.2	0.0	1.7
1975	2.3	0.9	-0.1	0.0	3.1
1976	0.5	0.5	-0.5	0.0	0.5
1977	-1.1	0.2	-0.3	0.0	-1.2
1978	0.2	0.1	0.3	-0.0	0.6
1979	1.2	0.1	0.5	0.0	1.8
1980	2.9	0.4	0.5	-0.1	3.7
1981	3.1	0.6	0.6	-0.0	4.2
1982	1.7	0.5	-0.1	0.0	2.1
1983	0.6	1.6	-1.3	0.0	0.9
1984	-0.6	0.5	-0.5	-0.0	-0.6
1985	-0.2	0.3	0.9	-0.0	-0.8
1986	-1.3	-0.2	-0.9	0.0	-2.4
1987	0.0	0.0	-0.4	0.0	-0.3

II. Adjustments as percent of GDP

Country=Brazil

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	0.7	-0.6	-0.6	0.1	-0.3
1974	0.5	-0.4	-2.8	4.4	1.7
1975	1.0	0.2	0.4	1.5	3.1
1976	0.1	0.2	1.2	-1.0	0.5
1977	-0.6	0.5	1.8	-3.0	-1.2
1978	0.0	0.7	0.6	-0.8	0.6
1979	0.5	0.7	-0.1	0.7	1.8
1980	2.1	0.3	0.6	0.7	3.7
1981	2.7	1.4	1.3	1.2	4.2
1982	0.5	1.4	1.5	-1.4	2.1
1983	2.0	2.1	2.1	-5.2	0.9
1984	2.2	1.1	1.7	-5.6	-0.6
1985	1.1	0.3	1.2	-3.4	-0.8
1986	-1.7	0.0	-0.8	0.0	-2.4
1987	-0.2	0.1	-0.1	-0.2	-0.3

Country=Cote dIvoire

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1974	-2.9	1.6	0.5	1.7	0.9
1975	4.3	3.7	-0.2	2.0	9.8
1976	-0.9	2.0	-0.9	3.4	3.7
1977	-15.6	0.9	-0.4	2.2	-13.0
1978	-4.9	0.4	0.5	2.3	-1.6
1979	-0.5	0.5	1.0	2.7	3.7
1980	2.6	1.5	0.9	2.6	7.5
1981	11.1	3.1	0.9	1.0	14.1
1982	11.0	2.4	-0.2	-2.9	10.3
1983	4.6	5.5	-1.8	-3.3	5.0
1984	-5.9	1.5	-0.7	-1.7	-6.7
1985	-9.5	0.9	-1.7	-0.7	-11.0
1986	-4.9	-0.5	-1.6	0.9	-6.1
1987	2.6	0.1	-0.9	0.6	2.4

II. Adjustments as percent of GDP 19:17 Monday, October 21, 1991 12

Country=Cote dIvoire

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1974	6.0	2.1	-2.4	-4.8	0.9
1975	3.8	0.4	3.7	2.0	9.8
1976	4.8	-0.9	3.5	-3.7	3.7
1977	-4.3	0.2	-4.2	-4.6	-13.0
1978	0.3	-0.1	-4.2	2.4	-1.6
1979	-4.4	1.3	0.7	6.1	3.7
1980	-2.4	2.3	1.5	6.1	7.5
1981	2.4	2.7	7.6	1.4	14.1
1982	4.2	3.3	8.0	-5.3	10.3
1983	1.7	3.6	4.9	-5.2	5.0
1984	0.3	4.1	1.7	-12.9	-6.7
1985	-2.6	1.9	0.9	-11.3	-11.0
1986	-1.3	1.0	0.6	-6.4	-6.1
1987	-2.5	1.6	0.3	3.0	2.4

I. Shocks as percent of GDP

Country=Germany

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	-1.3	0.0	0.0	0.6	-0.7
1974	0.4	1.0	0.0	0.5	1.9
1975	-0.6	2.7	-0.0	0.5	2.6
1976	0.3	1.6	-0.0	0.3	2.1
1977	-0.1	0.8	-0.0	0.2	0.7
1978	-1.1	0.3	-0.0	0.3	-0.6
1979	-0.5	0.3	0.0	0.4	0.2
1980	1.0	1.0	0.0	0.5	2.5
1981	3.0	2.2	0.0	-0.0	5.2
1982	0.9	1.7	-0.0	-0.2	2.5
1983	-0.4	3.7	0.0	-0.3	3.1
1984	0.4	1.2	0.0	-0.0	1.6
1985	0.2	0.7	0.1	-0.1	0.8
1986	-4.0	-0.4	0.1	0.3	-4.0
1987	-4.1	0.1	0.0	0.5	-3.6

II. Adjustments as percent of GDP

Country=Germany

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	0.4	0.0	-0.4	-0.7	-0.7
1974	3.0	0.4	-0.2	-1.2	1.9
1975	0.4	0.9	-0.3	1.6	2.6
1976	1.1	0.4	-2.0	2.6	2.1
1977	0.0	0.2	-1.0	1.6	0.7
1978	-0.2	0.0	-0.9	0.5	-0.6
1979	-0.7	-0.1	-1.0	2.0	0.2
1980	-0.2	0.1	-0.5	3.1	2.5
1981	1.6	0.5	1.2	1.8	5.2
1982	0.7	1.2	0.8	-0.2	2.5
1983	2.2	0.4	-0.1	0.6	3.1
1984	0.9	0.3	-1.0	1.3	1.6
1985	1.4	0.2	-1.3	0.5	0.8
1986	-0.7	0.3	-1.2	-2.3	-4.0
1987	-0.8	0.2	-1.1	-1.9	-3.6

INDIA

Country=India

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	0.0	0.0	0.0	-0.0	0.1
1974	1.4	0.2	0.0	-2.2	-0.6
1975	1.9	0.6	-0.0	0.4	2.9
1976	0.3	0.4	-0.0	0.0	1.2
1977	-1.0	0.2	-0.0	0.0	-0.8
1978	-0.7	0.1	0.0	-0.5	-1.1
1979	0.6	0.1	-0.0	-0.5	0.1
1980	0.4	0.3	-0.1	-1.0	-0.4
1981	-0.7	0.4	-0.0	-0.4	-0.6
1982	-1.4	0.3	-0.0	-0.1	-1.1
1983	-1.1	0.7	-0.1	0.0	-0.5
1984	-1.8	0.2	-0.0	0.1	-1.5
1985	-0.0	0.1	-0.1	0.1	0.1
1986	0.0	-0.1	-0.1	0.1	-0.1
1987	-0.9	0.0	-0.1	-0.1	-1.0

II. Adjustments as percent of GDP 19:17 Monday, October 21, 1991 36

Country=India

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	-0.3	0.2	-0.2	0.3	0.1
1974	0.0	0.3	0.6	-1.5	-0.6
1975	1.1	-0.2	1.3	0.7	2.9
1976	1.1	-0.1	1.0	-0.9	1.2
1977	0.2	-0.2	-0.3	-0.6	-0.8
1978	-0.5	-0.2	-1.3	0.9	-1.1
1979	-0.3	0.4	-1.4	1.5	0.1
1980	-0.5	0.1	-2.2	2.1	-0.4
1981	0.5	-0.1	-2.4	1.4	-0.6
1982	0.4	-0.2	-1.4	0.1	-1.1
1983	0.9	-0.4	-0.2	-0.7	-0.5
1984	0.1	-0.2	-1.1	-0.4	-1.5
1985	-0.7	-0.3	0.5	0.6	0.1
1986	-0.4	-0.2	0.2	0.3	-0.1
1987	0.3	-0.0	-1.3	0.0	-1.0

I. Shocks as percent of GDP

Country=Ireland

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	-4.5	0.1	-0.0	-1.5	-5.9
1974	7.7	1.6	0.0	-2.2	7.1
1975	8.9	3.5	-0.0	-2.1	10.3
1976	3.5	2.3	-0.4	-0.2	5.2
1977	1.2	1.1	-0.4	-2.5	-0.7
1978	0.2	0.4	0.6	-3.5	-2.3
1979	3.3	0.4	0.9	-3.4	1.3
1980	6.9	1.4	0.8	-1.7	7.3
1981	5.5	2.7	0.8	1.3	10.3
1982	0.3	2.1	-0.2	1.2	3.3
1983	-3.6	4.8	-2.1	0.7	-0.2
1984	-1.7	1.6	-1.0	0.2	-0.9
1985	-1.0	0.9	2.0	1.2	-3.4
1986	-2.5	-0.6	-2.5	-1.6	-7.2
1987	-2.1	0.1	-1.1	-0.9	-4.0
1988	-2.4	-1.1	0.4	-1.0	-4.1

II. Adjustments as percent of GDP

Country=Ireland

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	-1.7	-0.3	-5.0	1.0	-5.9
1974	1.2	-0.7	-1.2	7.8	7.1
1975	5.6	-0.3	7.8	-2.8	10.3
1976	3.7	1.7	0.4	-0.6	5.2
1977	4.5	-0.5	-3.4	-1.4	-0.7
1978	5.6	-1.6	-7.4	1.0	-2.3
1979	3.6	-0.6	-9.0	7.4	1.3
1980	3.5	0.4	-0.6	4.0	7.3
1981	3.4	0.4	1.9	4.6	10.3
1982	2.2	1.2	5.1	-5.1	3.3
1983	8.9	1.2	0.0	-10.3	-0.2
1984	9.3	1.2	-2.7	-8.6	-0.9
1985	6.3	1.4	-2.9	-8.2	-3.4
1986	0.5	3.4	-3.6	-7.5	-7.2
1987	4.4	1.8	-1.9	-8.2	-4.0
1988	2.3	1.7	-0.6	-7.5	-4.1

I. Shocks as percent of GDP

Country=Kenya

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	4.2	0.0	0.4	0.4	5.1
1974	8.0	0.9	0.5	0.4	9.8
1975	9.2	2.2	-0.2	-0.4	10.9
1976	1.5	1.3	-1.1	0.6	2.4
1977	-6.6	0.6	-0.5	-0.8	-7.3
1978	0.4	0.3	0.5	-0.9	0.2
1979	4.4	0.3	0.6	-0.5	4.8
1980	8.6	0.8	0.5	-0.9	9.0
1981	9.5	1.4	0.4	-1.6	9.8
1982	4.4	1.1	-0.1	0.3	5.7
1983	3.0	2.5	-0.8	-0.2	4.6
1984	-2.1	0.7	-0.3	-0.0	-1.7
1985	1.7	0.4	0.7	-0.5	1.0
1986	-1.0	-0.3	-0.8	-0.3	-2.3
1987	2.3	0.1	-0.4	-0.3	1.7

II. Adjustments as percent of GDP

Country=Kenya

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	1.6	-2.9	7.9	-1.5	5.1
1974	0.3	0.1	3.0	6.5	9.8
1975	0.5	2.7	7.3	0.5	10.9
1976	-2.4	3.4	6.6	-5.2	2.4
1977	-1.6	1.1	0.5	-7.4	-7.3
1978	-2.9	0.3	-7.0	9.7	0.2
1979	-2.8	-0.2	3.0	4.8	4.8
1980	1.6	0.3	2.5	7.9	9.0
1981	-1.1	1.2	13.0	-3.4	9.8
1982	-1.9	2.5	11.3	-6.2	5.7
1983	0.2	3.0	13.8	-12.4	4.6
1984	-1.1	2.4	2.3	-5.4	-1.7
1985	-0.2	1.6	2.8	-3.3	1.0
1986	0.9	0.4	-1.2	-2.4	-2.3
1987	-0.4	0.0	-1.5	3.5	1.7

I. Shocks as percent of GDP

Country=Korea

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	3.5	0.0	0.1	-0.1	3.5
1974	9.7	0.8	0.2	-0.2	10.4
1975	8.7	2.5	-0.1	-0.1	10.9
1976	1.2	1.3	-0.4	-0.5	1.7
1977	-2.1	0.7	-0.2	0.1	-1.6
1978	-2.3	0.3	0.2	-0.4	-2.3
1979	0.1	0.3	0.3	-0.1	0.6
1980	6.4	1.1	0.6	-0.1	8.0
1981	5.8	1.9	0.6	-0.1	8.2
1982	0.7	1.5	-0.1	-0.0	2.0
1983	-1.5	3.3	-0.8	-0.1	0.9
1984	-1.3	1.1	-0.3	-0.0	-0.6
1985	-0.8	0.6	-0.6	-0.0	-0.8
1986	-2.7	-0.5	-0.6	-0.4	-4.2
1987	-2.1	0.1	-0.2	-0.4	-2.5
1988	-2.2	-0.8	0.0	-0.3	-3.2

II. Adjustments as percent of GDP

Country=Korea

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	10.7	-0.4	-3.3	-3.6	3.5
1974	7.6	-0.4	-1.9	5.1	10.4
1975	7.6	-0.2	1.1	2.4	10.9
1976	9.0	-0.7	-2.2	-4.5	1.7
1977	7.5	-0.8	-4.2	-4.1	-1.6
1978	5.2	-0.7	-6.8	-0.0	-2.3
1979	0.0	0.2	-3.9	4.3	0.6
1980	2.0	4.6	-0.8	2.2	8.0
1981	5.4	3.9	0.7	-1.8	8.2
1982	3.6	2.4	1.2	-5.2	2.0
1983	6.9	-0.8	0.6	-5.8	0.9
1984	3.9	-0.6	0.6	-4.5	-0.6
1985	2.1	0.1	1.9	-4.9	-0.8
1986	5.1	-0.5	-0.6	-8.2	-4.2
1987	8.9	-1.1	-2.8	-7.5	-2.5
1988	6.5	-1.1	-2.3	-6.2	-3.2

I. Shocks as percent of GDP

Country=Malawi

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	3.1	0.0	-0.2	-0.6	2.3
1974	5.3	1.1	-0.6	0.2	6.1
1975	5.8	2.5	0.2	0.0	8.6
1976	4.5	1.4	-0.4	-2.6	2.9
1977	-1.9	0.7	0.0	-1.3	-2.5
1978	0.9	0.3	0.7	-2.7	-0.9
1979	6.5	0.4	2.5	-2.0	7.3
1980	9.2	0.9	2.0	-1.7	10.4
1981	1.7	1.6	1.6	-0.3	4.5
1982	-2.1	1.4	-0.2	0.9	-0.1
1983	0.2	3.1	-2.0	1.5	2.8
1984	0.3	1.0	-0.9	1.0	1.4
1985	4.0	0.6	-1.8	0.4	3.4
1986	4.9	-0.4	-2.1	-0.5	1.8
1987	2.8	0.1	-0.8	-0.5	1.6
1988	0.9	-0.8	0.1	-4.6	-4.4

II. Adjustments as percent of GDP

Country=Malawi

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	1.4	-0.5	1.6	-0.1	2.3
1974	0.5	-0.4	2.1	3.8	6.1
1975	1.7	-1.1	-1.0	9.0	8.6
1976	1.5	-0.5	9.6	-7.7	2.9
1977	-3.0	0.1	10.3	-9.9	-2.5
1978	-3.9	-0.9	1.2	2.8	-0.9
1979	1.8	-0.6	-1.4	7.5	7.3
1980	5.6	1.3	5.0	-1.5	10.4
1981	-1.9	4.3	9.3	-7.2	4.5
1982	-4.9	3.0	6.6	-4.7	-0.1
1983	0.6	0.9	3.0	-1.8	2.8
1984	4.8	0.2	6.0	-9.6	1.4
1985	3.1	0.0	0.9	-0.7	3.4
1986	-0.6	0.8	4.8	-3.1	1.8
1987	-1.5	1.2	2.4	-0.5	1.6
1988	-2.6	1.2	-2.7	-0.3	-4.4

I. Shocks as percent of GDP

Country=Malaysia

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	-4.0	0.0	0.4	0.1	-3.5
1974	-11.3	1.0	0.6	-0.1	-9.7
1975	0.5	3.3	-0.2	-0.2	3.3
1976	-2.1	1.9	-1.0	-0.1	-1.1
1977	-4.5	1.0	-0.5	-0.0	-4.1
1978	-3.0	0.4	0.6	0.1	-2.0
1979	-11.1	0.4	0.9	-0.1	-9.9
1980	-8.6	1.4	0.6	-0.0	-6.6
1981	1.8	2.9	0.5	0.0	5.2
1982	6.9	2.3	-0.1	0.0	9.1
1983	3.6	4.3	-1.5	-0.1	6.4
1984	-2.2	1.2	-0.6	0.0	-1.6
1985	1.8	0.8	-1.2	-0.1	1.4
1986	11.5	-0.7	-1.5	-0.2	9.1
1987	0.5	0.1	-0.7	-0.4	-0.5

II. Adjustments as percent of GDP

Country=Malaysia

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	-0.8	-2.3	2.6	-3.0	-3.5
1974	-6.4	-3.9	-2.1	2.7	-9.7
1975	-0.9	-2.5	4.7	2.0	3.3
1976	6.2	-1.8	3.1	-8.7	-1.1
1977	2.7	-1.2	0.5	-6.1	-4.1
1978	4.6	-0.7	-3.9	-2.0	-2.0
1979	3.0	-0.9	-5.8	-6.2	-9.9
1980	0.5	-1.6	-4.9	-0.5	-6.6
1981	-2.1	-2.2	-1.2	10.7	5.2
1982	1.4	-0.7	-1.4	9.8	9.1
1983	11.9	-1.7	-1.4	-2.3	6.4
1984	9.9	-0.5	-0.1	-11.0	-1.6
1985	6.9	2.9	3.1	-11.5	1.4
1986	10.2	4.8	0.7	-6.6	9.1
1987	8.6	3.0	-2.2	-9.9	-0.5

Country=United States

	Terms-of-Trade Shock (Fuel and other)	Net Export Volume Shock	Intrst Rate Shock	Trnsfrs Shock	Total Shock
1973	0.2	0.0	-0.1	0.0	0.1
1974	1.1	0.3	-0.2	0.2	1.5
1975	0.8	0.8	0.1	-0.0	1.7
1976	0.2	0.5	0.3	-0.0	1.0
1977	0.2	0.3	0.2	-0.0	0.6
1978	0.3	0.1	-0.2	0.0	0.2
1979	0.7	0.1	-0.3	0.0	0.5
1980	1.6	0.4	-0.2	0.1	1.8
1981	0.7	0.6	-0.2	0.0	1.2
1982	-0.0	0.5	0.0	0.1	0.6
1983	-0.6	1.1	0.2	0.0	0.8
1984	-0.3	0.3	0.1	0.1	0.2
1985	-0.2	0.1	0.1	0.1	0.1
1986	-0.4	-0.1	0.1	0.1	-0.3
1987	0.2	0.0	0.0	-0.0	0.3
1988	0.2	-0.2	-0.0	-0.0	0.0

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Country=United States

	Export Promotion	Output Compression	Import Substitution	Additional financing	Total Adj. Including Addl. Fin
1973	0.6	-0.1	-0.4	0.1	0.1
1974	1.0	0.1	-0.3	0.7	1.5
1975	0.8	0.3	0.8	-0.2	1.7
1976	-0.1	0.1	-0.5	1.5	1.0
1977	-0.4	-0.1	-1.0	2.1	0.6
1978	0.0	-0.3	-0.9	1.4	0.2
1979	0.7	-0.2	-0.2	0.2	0.5
1980	1.0	0.2	0.6	0.0	1.8
1981	0.3	0.2	0.5	0.2	1.2
1982	-1.2	0.5	0.5	0.8	0.6
1983	-0.6	0.1	-0.5	1.8	0.8
1984	-0.4	-0.3	-1.4	2.3	0.2
1985	-0.3	-0.3	-0.9	1.7	0.1
1986	-0.4	-0.2	-1.1	1.4	-0.3
1987	0.1	-0.2	-0.5	0.8	0.3
1988	0.8	-0.2	-0.2	-0.3	0.0

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